

QUIVIRA MINING COMPANY
HANDLING/DISPOSAL OF BYPRODUCT MATERIAL
AND CONTAMINATED WASTE
STANDARD OPERATING PROCEDURES

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I. INTRODUCTION

1.1 Purpose

The primary objective of the Handling Byproduct Material Standard Operating Procedure (SOP) is to establish procedures and precautionary measures for unloading, transporting, and final disposal of byproduct material at the Ambrosia Lake mill facility by Quivira Mining personnel. In addition to this, this SOP also describes the methods to be utilized for disposing contaminated waste materials resulting from past milling activities.

This guide also outlines the handling and transportation requirements as established by the Department of Transportation (DOT) and the Nuclear Regulatory Commission (NRC), as well as those established by company policies to ensure compliance with Federal regulations and company policies.

1.2 Scope

This manual provides general information pertaining to Quivira Mining Personnel involved in the unloading and the final disposal of byproduct material. The areas covered include the packaging requirements, shipping papers, unloading, transporting, storage, and final disposal within the Ambrosia Lake tailings pile.

II. DEFINITIONS

Bioassay - as used in this guide, a sample of urine voided into a collection bottle and analyzed for uranium content.

Carrier - entity or organization which accepts an offer to transport lading to a specific destination.

Consignee - as used in this guide, it means Quivira Mining Company and its employees.

Consignor - as used in this guide, it represents entities who originates the byproduct material for shipment.

Department of Transportation (DOT) - U.S. governmental department charged with the regulation and enforcement of transportation of goods.

Exclusive Use - means the sole use of a conveyance by a single consignor and for which all initial, intermediate, and final loading and unloading are carried out in accordance with the direction of the consignor or consignee. Specific instructions for maintenance of exclusive use shipments controls must be issued in writing and included with the shipping paper information provided to the carrier by the consignor.

Lapel Samplers - air sampling equipment worn in an individual's breathing zone to collect an air sample to be analyzed for radionuclides to determine an airborne exposure.

Nuclear Regulatory Commission (NRC) - U.S. governmental agency charged with the regulation and enforcement of rules and regulations pertaining to radioactive substances.

Radiation Safety Officer (RSO) - individual assigned responsibility and is experienced in the implementation, maintenance, and direction of health physics programs within the confines of a restricted uranium fuel cycle operation.

Respiratory Protection - wearing of a device designed to protect the wearer from inhalation of harmful atmospheres.

Shipper - entity or organization which offers lading to be transported to a specific destination.

III. DRUM HANDLING AND PACKAGING

3.1 Cleaning

The containers received for final disposal will have been cleaned so as to meet the DOT conveyance requirements for Low Specific Activity (LSA) material for exclusive use transportation. As such, the possibility of contamination release is minimal. However, should contamination exist upon arrival, all contamination on the transportation vehicle will be cleaned to comply with NRC Regulatory Guide 8.30 using methods determined by the RSO. The shipper will be notified of the contamination problem by the RSO.

3.2 Packaging

The containers containing the byproduct material will be packaged within the truck to prevent movement normally incidental to the transportation of the load. The exterior of each container will be stenciled with "Radioactive-LSA".

IV. RECEIVING AND SHIPMENT PAPERS

4.1 Receiving

The package, when received, should be in unimpaired condition and securely closed so that there will be no leakage of radioactive material. The package should comply with DOT requirements for "LSA Shipments" as outlined in 49 CFR 173.425. It should also comply with 49 CFR 173.441 which states that the external radiation levels will not exceed 200 millirem per hour on the surface of the package, 10 millirem per hour at any point 2 meters from the vertical planes on the outside of the transport vehicle, and 2 millirem per hour in any normally occupied position within the transport vehicle.

The shipment should have been adequately braced so as to prevent the shifting of lading under normal conditions of transportation.

The package should also comply with 49 CFR 173.443(a) which states that non-fixed radioactive surface contamination on the external surface of the package will not exceed 2200 dpm/100 cm².

4.2 Transportation Papers

Shipping papers should have been completed in accordance with DOT regulations as outlined in 49 CFR 172.200, 201, 203, 204 and NRC regulation 10 CFR 71.5. Contained within the shipping papers is a "Notice of Shipment". A copy of this document will be obtained from the carrier and retained on site.

V. TRANSPORTATION

5.1 Transportation

The transporting will be performed by an exclusive use carrier for the consignor. The lading will normally be transported primarily via U.S. Interstate Highway 25 from the In-Situ Leach Project to Quivira Mining Company in Ambrosia Lake, New Mexico.

In the unlikely event a motor vehicle accident should occur enroute, the driver should follow the instructions given to them by consignor personnel including the prompt notification of local law enforcement officials, the carrier, and the shipper. If Quivira is contacted and requested to provide assistance, the RSO and/or General Manager will be immediately notified.

VI. DELIVERY OF BARRELS

6.1 Unloading

Unloading of the packages will be performed by Quivira personnel only. The packages will be unloaded with the appropriate equipment. The packages may either be unloaded at the approved burial site and buried; or if storage is necessary, all crates will be stored within the designated storage area. The designated storage area is within the fenced area of the warehouse. This area is shown in Plate 1. The boundary fence is a chain link fence with a barbed wire topping. Access into the locked designated storage area is controlled by Quivira personnel 24 hours a day.

A member of the Ambrosia Lake health physics staff will survey the transport vehicle for radioactive contamination prior to its acceptance and prior to its release from Quivira Mining Company's property.

If the vehicle is being used to ship material for exclusive use back to the In-Situ Project, the vehicle shall not be released or returned to service until the external dose rate at the accessible surfaces of the vehicle are below 0.5 millirem/hour. Removable radioactive surface contamination shall be below 2,200 dpm/100 cm² as per DOT regulation 49 CFR 173.443.

However, if the carrier has completed the contractual obligations as an exclusive carrier and is being released for other unconditional use, contamination limits as specified in Regulatory Guide 8.30 shall apply. These limits include:

Average

5,000 dpm alpha per 100 cm²

Averaged over no more than 1 meter².

Maximum

15,000 dpm alpha per 100 cm²

Applies to an area of not more than 100 cm²

Removable

1,000 dpm alpha per 100 cm²

Determined by smearing with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the smear.

If the decontamination procedures are needed to reduce contamination to acceptable levels, the decontamination will be performed on site by personnel designated by the Ambrosia Lake RSO. Appropriate protective measures including the use of radiological respirators, protective clothing, label samplers, and bioassays shall be determined by the RSO based on the nature and severity of contamination.

The appropriate documents will be stored on site for future reference.

VII. BURIAL

- 7.1 If the containers are to be temporarily stored rather than buried while unloading, the time table for transportation and disposal of the packages from the storage areas to the approved burial site on Pond 2, shall be at the discretion of the general manager or designee. The containers will be moved from the storage area to the approved final disposal area using equipment that will ensure that the integrity of the containers will remain intact and employee safety is not compromised. The approved burial area is indicated on Plate 2 and is the same area as approved by license condition #30.

The supervisor in charge of disposal will notify the health physics department immediately should the exterior of any container become damaged so as to release or possibly release radioactive material. If damage should occur, the procedures for clean up, if necessary, shall be determined by the RSO or the RSO's designee.

7.2 Burial Site Preparation

Burial site preparation shall only take place in the final disposal area as shown on Plate 2. The disposal area shall be constructed prior to transporting the waste containers to the area. The disposal area shall be constructed using dozers or other suitable equipment for earth removal.

7.3 Burial

Burial of the containers shall be in the approved disposal area. The material may be placed within the disposal area for final burial using either a winch, fork lift or equivalent method depending on the ground conditions. Appropriate protective measures including the use of radiological respirators, protective clothing, lapel samplers, and bioassays will be determined by the RSO based on the nature of the material being disposed.

The method of placing the packages into the disposal area will be at the discretion of the supervisor in charge of disposal. Containers not containing sludge material or containers that are not full will be opened with the material disposed directly into the burial area.

Packages containing the sludge should be placed within the trenches side by side and in such a manner so as not to damage the containers and to provide a tight and compact manner of disposal.

The burial site will be covered at the discretion of the general manager or designee by means of physical burial. However, in the event a package is damaged during transportation or subsequent placement within the disposal trench to the extent that significant radionuclide release is a possibility, the area of possible release will be immediately covered. A minimum topping of one foot of material shall be used for cover.

When final disposal of the containers is through physical burial, a minimum of one foot of cover will be placed atop the packages.

VIII. CONTAMINATED MATERIAL FROM PAST/PRESENT MILLING ACTIVITIES

Contaminated mill equipment may consist of steel, wood, concrete and/or similar materials presently located in the mill area and cannot be decontaminated for release to unrestricted use.

All waste will be disassembled, crushed or compacted to the maximum extent possible to minimize voids.

Burial of this material shall follow the requirements outlined in Section 7.3 of this SOP.

Records shall be maintained indicating the quantity and location of all waste disposed within the tailings impoundments.

APPENDIX A

Fire Procedures and Guide

The Fire Procedures and Guide Manual are hereby adopted as part of the Handling/Disposal of Byproduct Material and Contaminated Waste Procedure.

APPENDIX B

Shower Policy

INTERNAL CORRESPONDENCE



(UNIT)

TO All Employees
FROM Arthur E. Gebeau

DATE November 24, 1992
SUBJECT Shower Policy and
Decontamination
Procedures

In keeping with Quivira Mining Company's policies in regard to regulatory compliance and keeping radiation exposures As Low As Reasonably Achievable (ALARA), the following procedures concerning the control of personnel radioactive contamination are hereby incorporated as operational policy during standby activities.

Yellowcake Operations

All employees who work within the confines of the controlled yellowcake area will be issued coveralls to be worn while inside this area. Before leaving the mill property at the end of the shift, these individuals shall perform one of the following procedures:

1. Shower and change into clean street clothes. Self monitoring with the radiation detection instrument is not required. The individual is assumed to be free of contamination.
2. If the individual does not shower, then that person shall wash potential areas of contamination (hands, arms, etc.) and change into clean street clothes. Additionally, prior to exiting the mill property, each individual will self monitor themselves to confirm that he meets the unrestricted standard for contamination. The radiation survey instrument will be located at the guard gate where the employee exits the mill property. If monitoring results indicate levels above those prescribed, showering is required.

Ion Exchange (IX) and Raffinate Processing

All employees who work within the confines of the IX building and/or employees who work along the raffinate processing circuit in the thickener area shall have two (2) sets of clothing: work clothes and clean street clothes supplied by themselves. One set of clothing or "work clothes" will be worn while performing normal duties within the IX building and/or work associated with raffinate processing. At the end of the shift, these employees shall perform one of the following:

1. Shower and change into clean street clothes. Self monitoring with the radiation detection instrument is not required. The individual is assumed to be free of contamination.
2. If the individual does not shower, then the person shall wash potential areas of contamination (hands, arms, etc.) and then change into clean street clothes. Additionally, prior to exiting the mill property, each individual will self monitor themselves to confirm that they meet the unrestricted standard for personnel contamination. The radiation detection instrument shall be located at the guard gate where the employee exits the mill property. If monitoring results indicate levels above those prescribed, showering is required.

Raffinate Unloading Building

All employees who work within the confines of the raffinate building during unloading activities shall be issued coveralls to be worn while inside the raffinate building. Before leaving the mill property at the end of the shift, these employees shall perform one of the following:

1. Shower and change into clean street clothes. Self monitoring with the radiation detection instrument is not required. The individual is assumed free of contamination.
2. If the individual does not shower, then the person shall wash potential areas of contamination (hands, arms, etc.) and change into clean street clothes. Additionally, prior to exiting the mill property, each employee shall self monitor themselves to confirm that they meet the unrestricted standard for contamination. The radiation detection instrument will be located at the guard gate where the employee exits the mill property. If monitoring results indicate levels exceeding those prescribed, showering is required.

In all operations, coveralls and work clothes exceeding prescribed contamination levels shall be decontaminated on site.

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November 24, 1992
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This policy is being instituted to help maintain radiation exposures ALARA. It is expected all employees will be familiar with this policy and cooperate fully, as in the past, to maintain good radiation protection.

A handwritten signature in cursive script, appearing to read "Arthur E. Gebeau".

Arthur E. Gebeau